



**AKTION ÖSTERREICH – TSCHECHISCHE REPUBLIK**  
*Wissenschafts- und Erziehungskooperation*  
**AKTION ČESKÁ REPUBLIKA – RAKOUSKO**  
*spolupráce ve vědě a vzdělávání*

**FINAL REPORT project 81p3**

**Title: DEVELOPMENT OF BILATERAL COOPERATION IN THE FIELD OF STEEL METALLURGY**

**Project duration: 03/2018-12/2018**

**Category: Pedagogy collaboration**

**Co-operating institutions:**

CZ: VŠB- Technical University of Ostrava / Faculty of Metallurgy and Materials Engineering (from the 23th November 2018 Faculty of Materials Science and Technology) / Department of Metallurgy and Foundry

Au: Montanuniversität Leoben / Department of Metallurgy/ Ferrous Metallurgy

**Project coordinator in Czech Republic: Markéta Tkadlečková, doc., Ing., Ph.D. - Assoc. Prof., VŠB-TUO**  
**project coordinator in Austria: Christian Bernhard, Ao. Univ.-Prof. Dipl.-Ing. Dr.mont., MU Leoben**

**Realised activities**

The main aim of the project was the development of bilateral cooperation in education and research in the field of steel metallurgy, namely between the Department of Metallurgy and Foundry, Faculty of Metallurgy and Materials Engineering (from the 23th November Faculty of Materials Science and Technology) at VŠB – Technical University of Ostrava in Czech Republic and Department of Ferrous Metallurgy of Montanuniversität Leoben in Austria.

Based on the primary goal of the project, 4 lectures were realised for students of bachelor, masters and doctoral study degree programs of both institutions. Invitation on lectures and the photo documentation can be seen in Fig. 1 and Fig.2. The Invitations were distributed through the website of faculties, through the Facebook of Faculty of Material Science and Technology, and directly by email to interested students.

The lectures were realized reciprocally on institutions of the project partners. The topics of the individual lectures introduced to students the possibilities of increasing the quality of continuously cast steel billets and steel ingots using the state-of-the-art methods of investigation, such as physical and numerical modelling, and the methods of thermal analysis, namely:

**BERNHARD Christian, Ao. Univ.-Prof. Dipl.-Ing. Dr.mont.,**

**Lecture theme (title): DEFECT FORMATION IN CONTINUOUS CASTING AND ITS IMPACT ON PRODUCT QUALITY (Range of Lectures: 2 hours/Summer semester 2018)**

**PRESOLY Peter, Dipl.-Ing., Dr.mont.**



Lecture theme (title): CASTING AND IDENTIFICATION OF HYPO-PERITECTIC STEELS (Range of Lectures: 4 hours/Summer semester 2018)

TKADLEČKOVÁ Markéta, doc. Ing. Ph.D., VŠB- Technical University of Ostrava  
 Lecture theme (title): PREDICTION OF QUALITATIVE PARAMETERS OF CONTINUOUSLY CAST STEEL BILLETS AND STEEL INGOTS USING NUMERICAL MODELLING (Range of Lectures: 2 hours/ Winter semester 2018)

STROUHALOVÁ Michaela, Ing., VŠB- Technical University of Ostrava  
 Lecture theme (title): STUDY OF STEEL PHASE TRANSFORMATIONS DURING SOLIDIFICATION PROCESS (Range of Lectures: 2 hours/ Winter semester 2018)

Part of the bilateral meetings included also the discussion on the theme of development of bilateral co-operation between the institutions in the form of co-administered and solved projects in the field of steel production and processing leading to the growth of the scientific research potential and capacities of both institutions of international importance. Within this, the laboratories with equipment of both departments were introduced and visited during the stay of participants of project reciprocally. Also the discussion with partners from steel industry was organized.

VŠB- Technical University of Ostrava  
 Faculty of Metallurgy and Materials Engineering  
 Department of Metallurgy and Foundry

in cooperation with  
 Montanuniversität Leoben  
 Department of Metallurgy

**Invitation - invited Lectures**

When: 20. April 2017  
 Where: P01B2, VŠB-TUO, OSTRAVA  
 From: 11:00

**BERNHARD Christian, Ao Univ.-Prof. Dipl.-Ing. Dr. mont.**  
 Head of the Workgroup "Continuous casting, Metallurgy and Materials"  
 Montanuniversität Leoben, Leoben, Austria

Lecture theme (title):  
**DEFECT FORMATION IN CONTINUOUS CASTING AND ITS IMPACT ON PRODUCT QUALITY**

**PRESOLY Peter, Dipl.-Ing. Dr. mont.**  
 Workgroup: Continuous Casting (Metallurgy and Materials, Casting of Peritectic Steel Grades) DSCop measurements and determination of phase diagrams of new alloys, Montanuniversität Leoben, Leoben, Austria

Lecture theme (title):  
**CASTING AND IDENTIFICATION OF HYPO-PERITECTIC STEELS**

The lectures are realized with the support of project **AKTION Österreich - Tschechische Republik (Wissenschafts- und Erziehungscooperation) No. 81p3** Development of bilateral cooperation in the field of steel metallurgy.

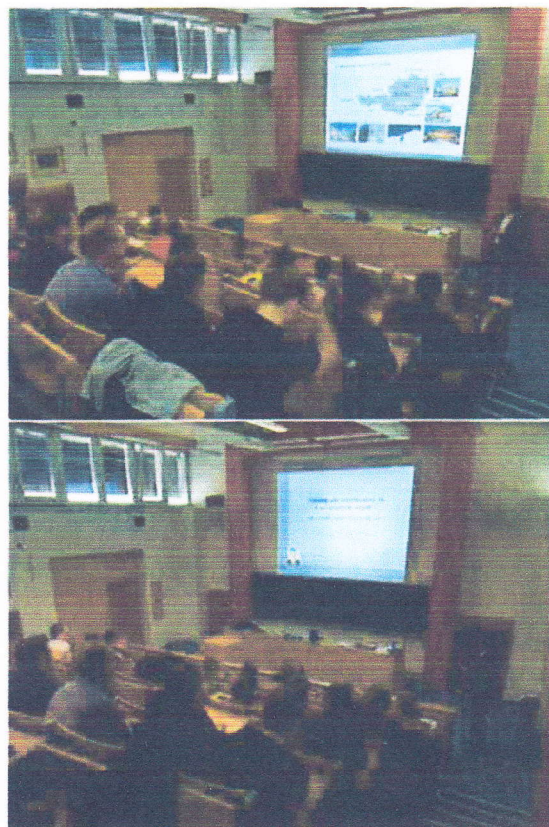


Fig.1 Lectures at VŠB-TUO



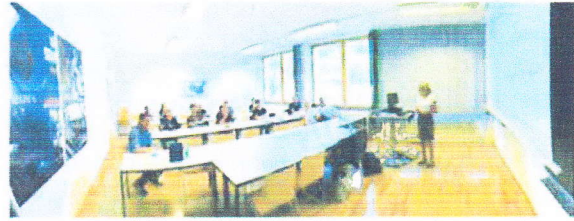
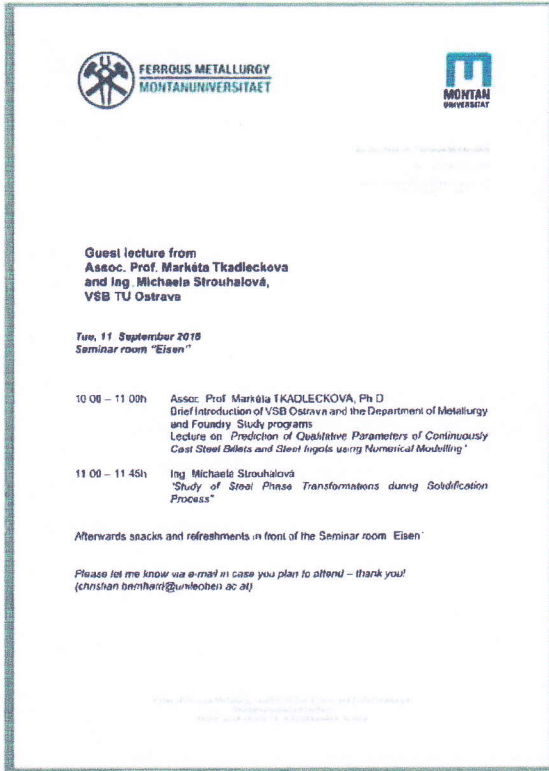


Fig.2 Lectures at Montanuniversität Leoben

### Results of the Project of Co-operation


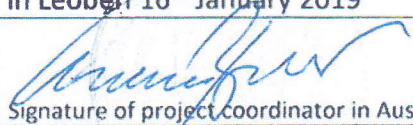
- [1] Bilateral lectures for students of both universities (including the list of participants together with photo documentation, confirmations of lectures, an overview of the use of finance - **non-public attachments** of projects).
- [2] The schema of future co-operation of universities in the field of co-administrated project of international meaning.
- [3] Final Report.

### Evaluation of co-operation

The project helped to deepen the awareness of students of both universities of the specialization of both departments and to increase the bilateral co-operation of both departments of universities (especially in the field of determination of thermodynamic properties of steel with using thermal analysis and special software).

The Aktion project allowed also to establish personal relationships, deepening the experience with realization of an international project of a smaller scale with the possibility of discussion and planning of the submission of a conjoint international bilateral project of research and development of significant meaning including the involvement of the application sphere, increasing the interest in studying the technically oriented study programs, increasing the exchange of doctoral students for short-term scientific stays.

In the year of 2019, the training of students in the software for calculating the composition of steel slag, simultaneously with the development of non-metal inclusions in the liquid steel, in relation to the selected composition of the slag and creation of the corresponding phase diagrams is planned.

In Ostrava 15 <sup>th</sup> January 2019	In Leoben 16 <sup>th</sup> January 2019
 Signature of project coordinator in Czech Republic	 Signature of project coordinator in Austria